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APPLICATION NO. -	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,965	03/26/2004	Yen-Ming Chen	TS01-0413C	9818
7590	01/19/2005		EXAMINER	
George O. Saile 28 Davis Avenue Poughkeepsie, NY 12603			TRINH, HOA B	
			ART UNIT	PAPER NUMBER
			2814	

DATE MAILED: 01/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/810,965

Applicant(s)

CHEN ET AL.

Examiner

Vikki H. Trinh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 29-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 29-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 0105.
- 4) ☒ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. 0105.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claim 1, drawn to a method of making, classified in class 438, subclass 106.
  - II. Claims 29-36, drawn to a device, classified in class 257, subclass 778.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by another and materially different process such that the process has a step of mechanically removing the exposed layer, instead of etching the exposed layer.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Mr. McClure on Jan. 10, 2005, a provisional election was made without traverse to prosecute the invention of Group II, claims 29-36. Affirmation of this election must be made by applicant in replying to this Office action.
5. Claim 1 has been canceled as being drawn to a non-elected invention.

### **Claims Status**

1. Claim 1 has been canceled.
2. Claims 29-36 are pending in this application. An examination on the merits follows hereinafter.

### ***Claim Objections***

1. Claims 29 and 34-36 are objected to because of the following informalities:

In claim 29, line 4, the term “or” is vague with respect to the claimed subject matter; and in line 12 of claim 29, a phrase “no larger than” denotes a negative connotation, and further, the phrase indicates ambiguity with respect to the claimed subject matter.

In claim 34, line 2, “said semiconductor surface” lack antecedent basis; in line 3 of claim 34, “a semiconductor device” should be “one of the semiconductor devices”.

In claim 35, lines 1-2, a phrase “said at least one contact pad on said semiconductor substrate comprising a contact pad” does not further limit the claimed limitation. In line 3, “an “ should be “on”.

In claim 36, line 1, “with” should be replaced with a phrase “further comprising” .  
Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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3. Claims 29-36 are rejected under 35 U.S.C. 102(b) as being anticipated by Beddingfield (5,977,632).

As to claim 29, Beddingfield discloses a solder bump for interconnection of a flip chip device comprising a substrate 10 (fig. 5), active semiconductor devices 26, 28 (fig. 5) having been created over said substrate 10 (fig. 5); at least a contact pad 12, 13 (fig. 5) created over the substrate 10; a patterned layer of passivation 16 (fig. 5) exposing said at least one contact pad 13, 12 (fig. 5); a patterned layer of UBM 24, 22 (fig. 5) created over the at least one contact pad 12, 13 (fig. 5), a surface area of the UBM being sized and configured to the surface area of the at least one contact pad 12, 13 (fig. 5); and at least one layer of reflowed solder 28, 26 (fig. 5) overlying the patterned layer of UBM 24, 22 (fig. 5).

As to claims 30, 31, UBM 22, 24 (fig. 5) comprising a layer of chromium followed by a layer of copper followed by a layer of gold (col. 3, lines 48-51).

Note: Beddingfield teaches that UBM structure as a “composite” layer (col. 3, line 49). The term “composite” is to mean distinct parts or individuals making up a group. See <http://www.m-w.com/cgi-bin/dictionary?book=Dictionary&va=composite>.

As to claim 32, the passivation layer has a plurality of passivation layers 16, 18, 20 (fig. 5).

As to claim 33, the plurality of passivation layers 16, 18, 20 (fig. 5) are photosensitive polyimide (col. 3, lines 5-10).

As to claim 34, the at least one contact pad 12, 13 (fig. 5) being electrically connected with “a” semiconductor device with at least one conductive line of interconnect or with one conductive contact point (fig. 5)

As to claim 35, said at least one contact pad 12, 13 (fig. 5) has the contact pad 12, 13 (fig. 5) on a surface of a circuit and printing board circuit for a flip chip device and a metallized substrate and a device mounting support (col. 1, lines 13-16); col. 2, lines 58-60)

As to claim 36, a seed layer 18, 20 (fig. 5) is deposited over the patterned layer of passivation 16 (fig. 5).

### Conclusion

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Vikki Trinh whose telephone number is (571) 272-1719. The Examiner can normally be reached from Monday-Friday, 9:00 AM - 5:30 PM Eastern Time. If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Mr. Wael Fahmy, can be reached at (571) 272-1705. The office fax number is 703-872-9306.


Any request for information regarding to the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Also, status information for published applications may be obtained from either Private PAIR or Public Pair. In addition, status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. If you have questions pertaining to the Private PAIR system, please contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

Lastly, paper copies of cited U.S. patents and U.S. patent application publications will cease to be mailed to applicants with Office actions as of June 2004. Paper copies of foreign patents and non-patent literature will continue to be included with office actions. These cited U.S. patents and patent application publications are available for download via the Office's PAIR. As an alternate source, all U.S. patents and patent application publications are available

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on the USPTO web site ([www.uspto.gov](http://www.uspto.gov)), from the Office of Public Records and from commercial sources. Applicants are referred to the Electronic Business Center (EBC) at <http://www.uspto.gov/ebc/index.html> or 1-866-217-9197 for information on this policy. Requests to restart a period for response due to a missing U.S. patent or patent application publications will not be granted.

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**HOWARD WEISS**  
**PRIMARY EXAMINER**